Section 1 **MANAGEMENT OF CHANGE (MOC)**

ABU:	Plant:	Year:
D&R	4 Crude	2011

MOC No:	Originator:	Date Issued:	Passport No:	EWO No:
23282	Martinez, Dennis	3/10/2011		5268

Section 2 Reviewer:	MOC Category:	PSM:	MOC Type:	Expiration Date:	Other Temporary Reason
Preciado, Silvano E.	S/D		Permanent		

Project/Equipment Title: Installation of E-1165A & E-1165B Isolation & Bypass Manifold.

Description of Change:

Install Isolation & Bypass Manifold for E-1165A & E-1165B. This is part of the Long Term Solution for the Fouling of the Exchangers. This installation will allow operation the ability to bypass and Isolate E-1165A or E-1165B without having to Shutdown #4 Crude Unit.

MOC will be required if the change will:

- ☐ Cause the use of different feed, chemicals or catalysts?
- ☐ Cause the use of different process conditions, process control, instrumentation, and protective devices or affect upstream/downstream plants?
- ☑ Cause the use of new or modified equipment [which is other than inkind]?
- ☐ Alter equipment siting, building, trailer locations, roads or fire protection?
- ☐ Require modifying existing and/or developing new procedures?

Section 2 ☐ Simultaneously Begin Construction and Start-up

Stage 1	Pre-Implementation	Dept./Person Responsible	Date Complete	Completed By	References
	Design Review	Banerjee, Ruchira	8/4/2011	Banerjee, Ruchira	
	Process Engineering Review	Purvis, Benjamin A.	7/11/2011	Purvis, Benjamin A.	
	Instrumentation Review				
	Control System Review	Davis, David R.	7/12/2011	Davis, David R.	
	Utilities Review				
	Environmental/Regulatory Review	Elliott, Brad B.	9/14/2011	Elliott, Brad B.	
	Safety/Regulatory Review	Drach, Kyle H.	7/13/2011	Drach, Kyle H.	
	Building Permits Review	Linares, Elena E.	7/18/2011	Linares, Elena E.	
	Mechanical Review				
	Inspection Review	Beauregard, John T.	7/11/2011	Beauregard, John T.	
	Metallurgy Review	Prasad, Praneil-Maharaj	9/1/2011	Prasad, Praneil-Maharaj	
	Contruction Review	Lackey, Mark W.	7/25/2011	Lackey, Mark W.	
	Leak Seal Review				
	Relief System Review	Muha, Edward	7/12/2011	Muha, Edward	
	Infrastructure Review				
	PHA/HSE Review	Martinez, Dennis	#########	Martinez, Dennis	

Authorization to Implement Change (Begin Construction): Approver: Martinez, Dennis Date: 10/27/2011

Stage 2	Pre-Startup	Dept./Person Responsible	Date Complete	Completed By	References
	Procedures Review	Nelson, William	#########	Nelson, William	
	Communication/Training 1	Bessire, John P.	#########	Curry, David P.	
	Pre Start-up Safety Review	Preciado, Silvano E.	#########	Curry, David P.	

Authorization to Start-Up Change: Approver: Curry, David P. Date: 11/11/2011

Extension of Temporary Change Approved By:	Approver:	Expiration Date:	Extention Reason

Stage 3	Post-Startup	Dept./Person Responsible	Date Complete	Completed By	References
	Communication/Training				
	Process Safety Information	Lewis, John M.			

Change in Place - Reviews, Documentation & Testing Complete	Approver:	Date:

MOC Cancelled: Approver: Date:
Cancellation Reason:

Note 1: Emergency request for change should be routed by the Approver on the next working day | Retain Original in Division for five Years

Engineering Work Order - EWO

10/5/2012 10:05:28 AM

EWO #	5268	**Revision:**	0	**S/D EWO #:**	**BE-114-E1**
Originator:	Rojo, Raquel V.	**ABU:**	D&R	**Created On:**	8/5/2010
MOC #:	23282	**Section Two Reviewer:**	Preciado, Silvano E.	**Plant:**	4 Crude
Maximo W/O:		**Project Number:**		**Equipment#:**	
Item:		**SAP Cost Center:**		**EWO Type:**	Shutdown
Status:	Approved				

Title: Eliminate 4CU E1165's Pre-Heat Fouling, LTS

Scope: This EWO provides the instructions and requirements for relocation of E1148 and installation of isolation manifold for E1165A/B.

- ☐ **Cause the use of different feeds, chemicals, or catalysts?**
- ☐ **Cause the use of different process conditions, instrumentation, process control, or affect upstream/downstream plants?**
- ☑ **Cause the use of new or modified equipment (which is other than in-kind)?**
- ☐ **Alter equipment siting, building, trailer locations, roads, or fire protection?**
- ☑ **Require modifying existing and/or developing new procedures?**

Technical Basis For Change: New Procedures created for operation of the new manifold valves.

Safety Operator Required? Yes **In VOC Service?** Yes **In Plant Welding?** Yes

Approvers Section

Lead Engineer:	Dillon, Craig R.	########	Dillon, Craig R.	10/11/2011
Building Permit:	Linares, Elena E.	########	Linares, Elena E.	10/12/2011
Inspection:				
Impact Team Leader:				
Operations:	Sohnrey, Kenneth C.	########	Sohnrey, Kenneth C.	10/23/2011
Maintenance:	Greenfield, Matthew R.	########	Greenfield, Matthew R.	10/26/2011
Notify upon EWO Approval:				

Engineering Work Order - EWO

10/5/2012 10:05:28 AM

EWO #	5268	**Revision:**	0	**S/D EWO #:**	**BE-114-E1**
Originator:	Rojo, Raquel V.	**ABU:**	D&R	**Created On:**	8/5/2010
MOC #:	23282	**Section Two Reviewer:**	Preciado, Silvano E.	**Plant:**	4 Crude
Maximo W/O:		**Project Number:**		**Equipment#:**	
Item:		**SAP Cost Center:**		**EWO Type:**	Shutdown
Status:	Approved				

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- ☐ **Cause the use of different process conditions, instrumentation, process control, or affect upstream/downstream plants?**
- ☑ **Cause the use of new or modified equipment (which is other than in-kind)?**
- ☐ **Alter equipment siting, building, trailer locations, roads, or fire protection?**
- ☑ **Require modifying existing and/or developing new procedures?**

Technical Basis For Change: New Procedures created for operation of the new manifold valves.

This EWO is associated with an MOC.

MOC Approved By: Martinez, Dennis **Approved On:** 10/27/2011

Person Responsible	Notified On	Completed By	Completed On

Engineering Work Order - EWO

10/5/2012 10:05:28 AM

EWO #	5268	**Revision:**	0	**S/D EWO #:**	**BE-114-E1**
Originator:	Rojo, Raquel V.	**ABU:**	D&R	**Created On:**	8/5/2010
MOC #:	23282	**Section Two Reviewer:**	Preciado, Silvano E.	**Plant:**	4 Crude
Maximo W/O:		**Project Number:**		**Equipment#:**	
Item:		**SAP Cost Center:**		**EWO Type:**	Shutdown
Status:	Approved				

Title: Eliminate 4CU E1165's Pre-Heat Fouling, LTS

Scope: This EWO provides the instructions and requirements for relocation of E1148 and installation of isolation manifold for E1165A/B.

- ☐ **Cause the use of different feeds, chemicals, or catalysts?**
- ☐ **Cause the use of different process conditions, instrumentation, process control, or affect upstream/downstream plants?**
- ☑ **Cause the use of new or modified equipment (which is other than in-kind)?**
- ☐ **Alter equipment siting, building, trailer locations, roads, or fire protection?**
- ☑ **Require modifying existing and/or developing new procedures?**

Technical Basis For Change: New Procedures created for operation of the new manifold valves.

Design Review	Banerjee, Ruchira	7/11/2011	Banerjee, Ruchira	anerjee, Ruchi
Process Engineering Review	Purvis, Benjamin A.	7/11/2011	Purvis, Benjamin A.	7/11/2011
Instrumentation Review				
Control System Review	Davis, David R.	7/11/2011	Davis, David R.	7/12/2011
Utilities Review				
Environmental/Regulatory Review	Elliott, Brad B.	9/14/2011	Elliott, Brad B.	9/14/2011
Land Usage Review				
VOC Review	Martinez, Dennis	9/14/2011	Martinez, Dennis	9/14/2011
Safety/Regulatory Review	Drach, Kyle H.	7/11/2011	Drach, Kyle H.	7/13/2011
Building Permits Review	Linares, Elena E.	7/11/2011	Linares, Elena E.	7/18/2011
Mechanical Review				

Engineering Work Order - EWO

10/5/2012 10:05:28 AM

EWO #	5268	**Revision:**	0	**S/D EWO #:**	**BE-114-E1**
Originator:	Rojo, Raquel V.	**ABU:**	D&R	**Created On:**	8/5/2010
MOC #:	23282	**Section Two Reviewer:**	Preciado, Silvano E.	**Plant:**	4 Crude
Maximo W/O:		**Project Number:**		**Equipment#:**	
Item:		**SAP Cost Center:**		**EWO Type:**	Shutdown
Status:	Approved				

Title: Eliminate 4CU E1165's Pre-Heat Fouling, LTS

Scope: This EWO provides the instructions and requirements for relocation of E1148 and installation of isolation manifold for E1165A/B.

- ☐ **Cause the use of different feeds, chemicals, or catalysts?**
- ☐ **Cause the use of different process conditions, instrumentation, process control, or affect upstream/downstream plants?**
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- ☑ **Require modifying existing and/or developing new procedures?**

Technical Basis For Change: New Procedures created for operation of the new manifold valves.

Inspection Review	Beauregard, John T.	7/11/2011	Beauregard, John T.	7/11/2011
Metallurgy Review	Prasad, Praneil-Maharaj	7/11/2011	Prasad, Praneil-Maharaj	9/1/2011
Contruction Review	Lackey, Mark W.	7/11/2011	Lackey, Mark W.	7/25/2011
Relief System Review	Muha, Edward	7/11/2011	Muha, Edward	7/12/2011
Infrastructure Review				
InteaTrac Review				
Fire Proection Review	Bosworth, Gregory A.	7/11/2011	Bosworth, Gregory A.	7/11/2011
PHA/HSE Review	Martinez, Dennis	10/9/2011	Martinez, Dennis	10/26/2011

DESIGNS REVIEW CHECKLIST

You have been assigned a Design Engineering Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number	23282
Filing Reference	
Person Responsible	Banerjee, Ruchira
Completed by	Banerjee, Ruchira
Date Completed	8/4/2011

Project/Equipment Description:

Install Isolation & Bypass Manifold for E-1165A & E-1165B. This is part of the Long Term Solution for the Fouling of the Exchangers. This installation will allow operation the ability to bypass and Isolate E-1165A or E-1165B without having to Shutdown #4 Crude Unit.

Demo scope of the LTS project includes the following:
E-1166 (out of service) will be removed.
E-1166 pedestals will be modified for for future exchanger relocation
E-1178 exchanger shellside/tubeside, inlet/outlet piping will be removed
E-1178 redestals will be removed

*When possible include copies of documents referenced in the summary.

DESIGNS REVIEW CHECKLIST

You have been assigned a Design Engineering Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 23282
Filing Reference
Person Responsible Banerjee, Ruchira
Completed by Banerjee, Ruchira
Date Completed 8/4/2011

Project/Equipment Description:

Install Isolation & Bypass Manifold for E-1165A & E-1165B. This is part of the Long Term Solution for the Fouling of the Exchangers. This installation will allow operation the ability to bypass and Isolate E-1165A or E-1165B without having to Shutdown #4 Crude Unit.

ENGINEERING REVIEW

- ☐ BIN Best Practic
- ☑ Civil & Structural
- ☐ Equipment Data Sheet
- ☐ Equipment Specification
- ☐ Fire Protection
- ☐ Hot Tap
- ☐ P&ID's Change due to New / Modified equipment
- ☐ P&ID's Change - Field condition not matching existing P&ID
- ☐ Plot Plan
- ☐ Seismic
- ☐ SIS Update
- ☐ Temporary Leak Repair

EQUIPMENT REVIEW

- ☐ Columns & Pressure Vessels
- ☐ Compressor, Blowers & Mechanical Equipment
- ☐ Concrete & Steel Structure, Walks and Stair
- ☐ Control Rooms & Building
- ☑ Exchangers, Condensers, Heaters & Cooling Tower
- ☐ Facilities & Siting
- ☑ Foundation
- ☐ Furances & Boilers
- ☐ Honeywell
- ☐ Honeywell Process Simulator
- ☐ HVAC
- ☐ Instrumentation
- ☐ Insulation
- ☐ Noise
- ☑ Piping
- ☐ Pumps & Drivers
- ☐ Relief & Venting Systems
- ☐ Sewers, Roads & Miscellaneous
- ☐ Tanks
- ☐ Update Refinery Relief Study
- ☐ Utility Systems

SUMMARY OF REVIEW*

Demo scope of the LTS project includes the following:

E-1166 (out of service) will be removed.
E-1166 pedestals will be modified for for future exchanger relocation
E-1178 exchanger shellside/tubeside, inlet/outlet piping will be removed
E-1178 redestals will be removed

*When possible include copies of documents referenced in the summary.

DESIGNS REVIEW CHECKLIST

You have been assigned a Design Engineering Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number	23282
Filing Reference	
Person Responsible	Banerjee, Ruchira
Completed by	Banerjee, Ruchira
Date Completed	8/4/2011

Project/Equipment Description:

Install Isolation & Bypass Manifold for E-1165A & E-1165B. This is part of the Long Term Solution for the Fouling of the Exchangers. This installation will allow operation the ability to bypass and Isolate E-1165A or E-1165B without having to Shutdown #4 Crude Unit.

☐ HVAC

*When possible include copies of documents referenced in the summary.

PROCESS ENGINEERING REVIEW CHECKLIST

You have been assigned a Process Engineering Review.
This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 23282
Filing Reference
Person Responsible Purvis, Benjamin A.
Completed By Purvis, Benjamin A.
Date Completed 7/11/2011

Project/Equipment Title:

Installation of E-1165A & E-1165B Isolation & Bypass Manifold.

DOCUMENTATION

- ☐ Drafting Work Requisition, MFG-5545
- ☐ Maximum Intended Inventory Update
- ☐ MSDS's
- ☐ PED Records
- ☐ Relief System Drawings

PROCESSES REVIEW

- ☐ ASTM-TBP-EFV Distillation Relationships
- ☐ BIN Best Practice
- ☐ Characterization of Petroleum Fractions
- ☐ Composition & Flow Information
- ☐ Conversion Factor & Constants
- ☐ Delivery Needs
- ☐ Densities
- ☐ Fundamental Properties
- ☐ Honeywell
- ☐ Honeywell Process Simulator
- ☐ Material & Energy Balance
- ☐ New Catalyst of Feeds
- ☑ Operating Parameters
- ☐ Physical Properties of Streams or Catalysts
- ☐ Solubilities
- ☐ Suppliers' Performance
- ☐ Surface Tensions
- ☐ Thermal Properties
- ☐ Upstream & Downstream Impacts
- ☐ Vapor-Liquid Equilibria
- ☐ Vapor Pressures
- ☐ Viscosities

SUMMARY OF REVIEW*

No PED issues with installing bypassing and manifolding. This will allow us to clean one exchanger while leaving two in service and should allow us to complete a year run without a pit stop.

*When possible include copies of documents referenced in the summary.

CONTROL SYSTEM REVIEW CHECKLIST

You have been assigned a Control System Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 23282
Filing Reference
Person Responsible Davis, David R.
Completed By Davis, David R.
Date Completed 7/12/2011

Project/Equipment Description:

Install Isolation & Bypass Manifold for E-1165A & E-1165B. This is part of the Long Term Solution for the Fouling of the Exchangers. This installation will allow operation the ability to bypass and Isolate E-1165A or E-1165B without having to Shutdown #4 Crude Unit.

CONTROL SYSTEM:

- ☐ Alarm Objective Analysis
- ☐ Analyzer Instruments
- ☐ Chevmon
- ☐ Control Objectives Analysis
- ☐ Control Room Design
- ☐ Control Systems
- ☐ Control Valves
- ☑ DCS
- ☐ Egatrol
- ☐ Electrical One-lines
- ☐ Field Installation
- ☐ Flow Measurements
- ☐ Honeywell
- ☐ Honeywell Process Simulator
- ☐ Instrument Seals, Purges and Winterizing
- ☐ Intrinsic Safety
- ☐ Ladder Logic Diagrams
- ☐ Level Measurements
- ☑ Loop Diagrams
- ☐ P&ID Change due to New / Modified equipment
- ☐ P&ID's Change - Field condition not matching existing P&ID
- ☐ Pressure Measurements
- ☐ Process Alarms
- ☐ Process Control
- ☐ Relief Systems
- ☐ Shutdown Systems
- ☐ System Design
- ☐ Temperatue Measurements

SUMMARY OF REVIEW*

will work with engineering, I&E and ops if any instrumentation is added.

*When possible include copies of documents referenced in the summary.

ENVIRONMENTAL REGULATORY REVIEW CHECKLIST

You have been assigned a Regulatory Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number: 23282
Filing Reference:
Person Responsible: Elliott, Brad B.
Completed By: Elliott, Brad B.
Date Completed: 9/14/2011

Project/Equipment Title:

Installation of E-1165A & E-1165B Isolation & Bypass Manifold.

Check that all Apply:

Chevron:

- ☐ **Yellow Book**
- ☐ **Correction or Alternations to Refinery Utility System (RI-503)**

CITY OF RICHMOND

- ☐ **CEQA (EIR's, etc**
- ☐ **City of Richmond Conditional Use Permits (Land use and Hazardous Materials)**

Regulatory

- ☐ **BAAQMD Air Regulations Permits (including Title V)**
- ☐ **BAAQMD Air Regulations: Additions, modifications, or deletions of VOC Components/Equipment (reg. 8-18 LDAR Program - equipment leaks/fugitive emissons)**
- ☐ **BAAQMD Air Regulations: Wastewater System components - reg 8-8 and NSPS QQQ (process drains, catch basins, manholes, sumps, cleanouts, oil-water separators)**
- ☐ **BAAQMD Air Regulations: Storage Tanks**
- ☐ **BAAQMD Air Regulations: Internal Combustion Engines**
- ☐ **BAAQMD Air Regulations: Flares**
- ☐ **BAAQMD Air Regulations: Boiler, Steam Generators, Process Heaters & Gas Turbines**
- ☐ **BAAQMD Air Regulations: SRU, Tail gas, or H2S Unit Changes**
- ☐ **BAAQMD Air Regulations: Long Wharf (Marine Terminal)**
- ☐ **Department of Transportation (DOT)**

SUMMARY OF REVIEW*

Contact the Air Compliance Inspection Group (ACIG) Supervisor at 2-3239 to arrange a VOC inspection, as well as to have VOC tags placed on any new pumps, valves or connections. Dismantled equipment should have associated VOC tags removed and given to the ACIG to facilitate their removal from the VOC database.

If there will be any additions, deletions, modifications, or other changes to Refinery process wastewater or storm-water system (drains, catch basins, etc.), contact Mark Piersante at 2-2707.

The VOC review is required on this MOC as a result of removing old and/or adding new equipment/lines/connections that have the potential to leak VOCs. This was added so the ACIG (Air Compliance Inspection Group-VOC group) would be aware of changes and their database would remain up to date with those changes. Changes were not always reported to them in the past and were subjecting the refinery to Notice of Violations from the BAAQMD. Contact ACIG Supervisor with any questions.

No other environmental regulatory issues.

*When possible include copies of documents referenced in the summary.

ENVIRONMENTAL REGULATORY REVIEW CHECKLIST

You have been assigned a Regulatory Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number: 23282
Filing Reference:
Person Responsible: Elliott, Brad B.
Completed By: Elliott, Brad B.
Date Completed: 9/14/2011

Project/Equipment Title:

Installation of E-1165A & E-1165B Isolation & Bypass Manifold.

- ☐ **EPA Benzene NESHAP (National Emissions Standards for Hazardous Air Pollutnats) (process vents, storage tanks, watewater systems, transfer operations, fugitive emissions**
- ☐ **EPA Benzene Waste Operations NESHAP (BWON)**
- ☐ **EPA MACT (Maximum Achievable Control Technology) Standards and Subparts (process inits, storage tanks, wastewater system, fugitive emissions)**
- ☐ **EPA NSPS (New Source Performance Standards) and Subparts (storage tanks, flares, wastewater components, fugitive emissions, boilers, process heaters)**
- ☐ **Chemical Inventory / Hazardous Materials Business Plan (e.g. New Chemicals:RI-313)**
- ☐ **Risk Management and Prevention Plan (RMPP)**
- ☐ **RWQCB Waste Discharge Orders, EPA Consent Agreement Sites**
- ☐ **RWQCB NPDES Regulations/Permits**
- ☐ **RWQCB SB-1050, Waste Discharge Requirements (WDR)**
- ☐ **Spill Prevention Control and Counter Measures Plan (SPCC Plan)**
- ☐ **Waste Regulations and Permit**
- ☐ **Wharf and Shoreline Permitting related agencies (BCDC, Army Corps, SLC, USCG, OSPR, EPA)**
- ☐ **Permit to Build and Remove Wells, County Permit Required**
- ☐ **Activities impacting groundwater protection system (GPS) or WDO sites**

Yes **No**

☑ ☐ **Any additions, modifications, or deletions of VOC Components/Equipment (including drains or wastewater components) that will change VOC identification/tag**

*When possible include copies of documents referenced in the summary.

VOC

Friday, October 05, 2012

REG-8, RULE-18 BAAQMD/BACT/MACT/NSPS

This form must be completed for all VOC component/equipment indentification requests (additions, modifications, deletions). For additional information, contact the area Environmental Field Coordinator or the Air Compliance Inspection Group Lead Inspector, @2.3239.

Person Responsible Martinez, Dennis

Completed by Martinez, Dennis

Date Completed 9/14/2011

Step 1: Complete the following information

MOC Number: 23282

ABU: D&R

Plant: 4 Crude

Date Of Request: 09/14/2011

Required Completion Date: 10/31/2011

Person Requesting Tagging: Rojo, Raquel V.

Requesting Tagging Ext: 2-1766

Person to Identify Equipment: Rojo, Raquel V.

Identify Equipment Ext: 2-1766

New Equipment: YES

Deletion: NO

Description: Installation of new isolation block valves for E-1165A&B, Crude & Resid sides, Flush system: #6 S/C Wash oil system.

Number:

Process:

Cost Center:

Environmental Fiield Coordinator Check All Applicable:

BAAQMD ☐ **BACT** ☐ **MACT** ☐ **NSPS** ☐ **Other Group**

Originator: Martinez, Dennis **Notified On:** 9/14/2011

Verified By: Martinez, Dennis **Verified On:** 9/14/2011

Step 2: Obtain a copy of P&ID (or similar drawings) and highlight changes and components in VOC service.

Step 3: Collect all tags that may have already been removed from equipment. Submit tags (if any), drawings and this completed form to the ACIG lead Inspector, @2.3239

SAFETY/ENVIRONMEMTAL REVIEW CHECKLIST

You have been assigned a Regulatory Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 23282
Filing Reference
Person Responsible Drach, Kyle H.
Completed By Drach, Kyle H.
Date Completed 7/13/2011

Project/Equipment Title:

Installation of E-1165A & E-1165B Isolation & Bypass Manifold.

Yes	No	Health & Safety Regulatory Review:
☐	☑	Changes to Refinery Instructions
☐	☑	Cal OHSA Construction Activity Permits
☑	☐	Meets Legal and SID Requirements
☐	☑	Hazardous Materials Business Plan Changes
☐	☑	Special OSHA Notifications Required
☐	☑	Impacts RMP
☐	☑	Additional Record Keeping Requirements

SUMMARY OF REVIEW*

Ensure isolation valves and bypass are per SID 2008 requirements for valve height and orientation. Review design with Safety prior to installation.

*When possible include copies of documents referenced in the summary.

BUILDING PERMITS REVIEW CHECKLIST

You have been assigned a Regulatory Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number	23282
Filing Reference	
Person Responsible	Linares, Elena E.
Completed By	Linares, Elena E.
Date Completed	7/18/2011

Project/Equipment Title:

Installation of E-1165A & E-1165B Isolation & Bypass Manifold.

SUMMARY OF REVIEW*

MOC signed off. A City building permit 11-01301 was procured to install isolation capability to E-1165 A&B at D&R.

*When possible include copies of documents referenced in the summary.

INSPECTION REVIEW CHECKLIST

You have been assigned a Inspection Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 23282
Filing Reference
Person Responsible Beauregard, John T.
Completed By Beauregard, John T.
Date Completed 7/11/2011

Project/Equipment Description:

Install Isolation & Bypass Manifold for E-1165A & E-1165B. This is part of the Long Term Solution for the Fouling of the Exchangers. This installation will allow operation the ability to bypass and Isolate E-1165A or E-1165B without having to Shutdown #4 Crude Unit.

INSPECTION:

- ☐ Additional Surveillance Required
- ☐ API Standards
- ☐ ASME Codes & Standards
- ☐ ASTM Standards
- ☐ Control Monitoring Requirements
- ☐ Electrical Inspection
- ☐ Fitness for Service Evaluation
- ☐ Honeywell
- ☐ Honeywell Process Simulator
- ☐ Inspection/Monitoring Requirements
- ☐ Non-Destructive Examination
- ☐ Normal Control Requirements
- ☐ Positive Materials Indentification
- ☐ Relief and Pressure Relief Devices Setting and Capacity
- ☐ Texas Nuclear (Metallurgy)
- ☐ UT Testing
- ☐ VOC Tagging Requirements

SUMMARY OF REVIEW*

Review EWO packages and set hold points as needed during work. Contact QA/QC, weld inspection and Fixed equipment inspection for PMI, heat treatment and base line readings.

*When possible include copies of documents referenced in the summary.

METALLURGY REVIEW CHECKLIST

You have been assigned a Metallurgy Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 23282
Filing Reference
Person Responsible Prasad, Praneil-Maharaj
Completed by Prasad, Praneil-Maharaj
Date Completed 9/1/2011

Project/Equipment Description:

Install Isolation & Bypass Manifold for E-1165A & E-1165B. This is part of the Long Term Solution for the Fouling of the Exchangers. This installation will allow operation the ability to bypass and Isolate E-1165A or E-1165B without having to Shutdown #4 Crude Unit.

Refinery Process Stream: _____

Service Description: _____

Process: _____

Other: _____

Operating Tempature: _____ **Operating Pressure:** _____

Design Tempature: _____ **Design Pressure:** _____

Product Form: _____ **Piping Classification:** _____

Equipment _____ **Other:** _____

New Material Type: _____ **Other:** _____

Connection for Piping Specification: _____ ☐ **Stress Relieved**

Piping Specification Comment: _____

If Required, what is stress relieving temperature: _____ **and Time** _____

Exchanger Bundle (Check all Applicable)

☐ **U-Bend Tube Bundle** ☐ **U-Bend Area Stress Relieved?**

☐ **Finned Tube Bundle** ☐ **Finned Area Stress Relieved?**

☐ **Straight Tube**

☐ **Tube Sheet and tubes made of different alloys?** **Explain:** _____

☐ **Cladded Tube sheet. Which side is clad?** _____

☐ **Other** _____

METALLURGY REVIEW CHECKLIST

You have been assigned a Metallurgy Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number	23282
Filing Reference	
Person Responsible	Prasad, Praneil-Maharaj
Completed by	Prasad, Praneil-Maharaj
Date Completed	9/1/2011

Project/Equipment Description:

Install Isolation & Bypass Manifold for E-1165A & E-1165B. This is part of the Long Term Solution for the Fouling of the Exchangers. This installation will allow operation the ability to bypass and Isolate E-1165A or E-1165B without having to Shutdown #4 Crude Unit.

Specification Change:

Other: Follow pipe class for new material and fabrication details.

CONSTRUCTION REVIEW CHECKLIST

You have been assigned a Construction Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 23282
Filing Reference
Person Responsible Lackey, Mark W.
Completed By Lackey, Mark W.
Date Completed 7/25/2011

Project/Equipment Description:

Install Isolation & Bypass Manifold for E-1165A & E-1165B. This is part of the Long Term Solution for the Fouling of the Exchangers. This installation will allow operation the ability to bypass and Isolate E-1165A or E-1165B without having to Shutdown #4 Crude Unit.

CONSTRUCTION:

- ☐ Building Permits
- ☐ Construction Limitations
- ☐ Coordination with Multiple Plant
- ☐ Coordination with Plant Protection
- ☑ Cranes
- ☐ Equipment Drawings
- ☐ Fire Protection Access/Requirement
- ☐ Honeywell
- ☐ Honeywell Process Simulator
- ☑ Hot Work
- ☑ Lay Down
- ☑ Personnel Qualification/Training
- ☐ Piles
- ☐ Plot Plan
- ☐ Restricted Area Classifications
- ☐ Schedules
- ☐ Site Specific Hazards
- ☐ Site Limitations
- ☐ Soil Removal
- ☐ Traffic Control
- ☐ Weather

SUMMARY OF REVIEW*

Work will be completed during the 4Q11 D&R Shutdown as outlined in EWO.

*When possible include copies of documents referenced in the summary.

RELIEF SYSTEM REVIEW CHECKLIST

You have been assigned a Relief System Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 23282
Filing Reference
Person Responsible Muha, Edward
Completed By Muha, Edward
Date Completed 7/12/2011

Project/Equipment Description:

Install Isolation & Bypass Manifold for E-1165A & E-1165B. This is part of the Long Term Solution for the Fouling of the Exchangers. This installation will allow operation the ability to bypass and Isolate E-1165A or E-1165B without having to Shutdown #4 Crude Unit.

RELIEF SYSTEM

- ☐ Abnormal Heat Input
- ☑ Blocked Outlet
- ☐ Chemical Reaction
- ☐ Columns & Pressure Vessels
- ☐ Cooling Failure
- ☐ Entrance of Volatile Material
- ☐ Heat Exchanger Tube Rupture
- ☐ Honeywell
- ☐ Honeywell Process Simulator
- ☑ Hydraulic Expansion
- ☐ Inadvertent Operating of Manual Valve
- ☐ Instrument Air failure
- ☐ Internal Explosion
- ☐ Loss of Upstream Heating
- ☐ Material of Construction
- ☐ P & ID and Isometric Update
- ☐ Power Failure
- ☐ Reflux Failure
- ☐ Relief Study Update
- ☐ Relief Valve Back Pressure

SUMMARY OF REVIEW*

Reviewed calculations performed by Bob Cowan of Jacobs Engineering.
Relief valves for each side of E-1165A/B/C are all sized indentically. Shell side evaluated Thermal and Fire cases. Tube side examined blocked outlet and Thermal.

*When possible include copies of documents referenced in the summary.

INSPECTION REVIEW CHECKLIST

You have been assigned a Inspection Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number: 23282

Completed On: 7/11/2011

Completed By: Bosworth, Gregory A.

Person Responsible: Bosworth, Gregory A.

Project/Equipment Description:

Install Isolation & Bypass Manifold for E-1165A & E-1165B. This is part of the Long Term Solution for the Fouling of the Exchangers. This installation will allow operation the ability to bypass and Isolate E-1165A or E-1165B without having to Shutdown #4 Crude Unit.

Yes	No	Plant Protection/Security Review
☐	☑	**City Fire-Plan Review is Mandato**
☐	☑	**City Fire-Permit is Mandato**
☐	☑	**City Acceptance Test is Mandato**
☑	☐	**Office of Fire Prevention Review On**

The scope of work has been reviewed by the Chevron Fire Marshal. Scope of work does not constitute a change in fire protection.

No additional Fire-Plan Review, Fire Construction Permit or Operational Permit is required from the Richmond Fire Marshal based on the current scope of work.

*When possible include copies of documents referenced in the summary.

HEALTH & SAFETY EVALUATION

Date Issued:	3/10/2011	**Maximo Number:**		**MOC Number**	23282
ABU:	D&R	**EWO Number**	5268	**Filing Reference**	
Plant:	4 Crude			**Person Responsible**	Martinez, Dennis
Section 2 Reviewer:	Preciado, Silvano E.			**Completed By**	Martinez, Dennis
Project/Equipment Title:	Installation of E-1165A & E-1165B Isolation & Bypass Manifold.			**Date Completed**	10/26/2011

Description: Install Isolation & Bypass Manifold for E-1165A & E-1165B. This is part of the Long Term Solution for the Fouling of the Exchangers. This installation will allow operation the ability to bypass and Isolate E-1165A or E-1165B without having to Shutdown #4 Crude Unit.

Step 1: ☐ Notify USW ☐ USW Representation Present **USW Representative:** Al Cruz

Worker's Committee Member/Steward's comments if unable to attend:

☐ Notify Trainer ☐ TrainerRepresentation Present **Training Representative:** Phil Bessire

Step 2: Involve: Operations, Maintenance, Technical and others with appropriate expertise relevant to the change (CRTC, Contractors, etc)

Attendees: Al Cruz (Ops), Ken Sohnrey (S/D Rep), Rob Wilkerson (S/D Supervisor), Craig Dillon (Project Engineer), Rachel Rojo (Project Manager), Kyle Drach (Safety), Dennis Martinez (Project Ops. Rep.)

Step 3: Think about the task at hand. Discuss the existing situation. Discuss the change. Discuss the impact of the change on the existing situation. Determine the training requirements for this change.

Step 4: **Training Type:** 1

Develop a list of concerns, consider your options, consider your following:

*H2S *NH3 *Acid *Caustic *Benzene *Fall Protection *Staging *Scott Air *PPE *Hot Work *Confined Space Entry *Evacuation Plan *Safety Operator

Concern	Consequence	Mitigation	Proceed Safely

HSE Action Items

Additional Comments

Operations asked to have the Bypass valves angled 15 deg. (One Stud Position) for better access. The S.I.D. survey showed that this would create a hand clearance problem with the other valves. The access for the bypass valves will be improved with a mobile step. Operations asked for the 2" Bleeder valves turned 90 deg. The group will look at this request. It does not look to improve access, or that the original position is causing any issues.

PROCEDURE REVIEW CHECKLIST

You have been assigned a Procedure Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

MOC Number 23282
Filing Reference
Person Responsible Nelson, William
Completed By Nelson, William
Date Completed 11/10/2011

Project/Equipment Description:

Install Isolation & Bypass Manifold for E-1165A & E-1165B. This is part of the Long Term Solution for the Fouling of the Exchangers. This installation will allow operation the ability to bypass and Isolate E-1165A or E-1165B without having to Shutdown #4 Crude Unit.

- ☐ Alarm Procedures
- ☐ Any Special or unique hazards
- ☐ COD/Ops Monitor
- ☐ Consequences of deviation
- ☐ Control measure to be taken if physical contact or airborne exposure occurs.
- ☐ Precautions necessay to prevent exposure, including administrative controls, engineering controls, and personnel protective equipment.
- ☐ properties of, and hazards presented by, the chemicals and operation of the process.
- ☐ References to additional procedures, such as Safe Work Practices
- ☐ Routine Duties
- ☐ Safety system and their functions
- ☐ Steps required to correct and/or avoid deviation

Steps fo each operatong Phase

- ☐ Emergency
- ☐ Normal
- ☐ Start-Up/Shutdown
- ☐ Temporary

SUMMARY OF REVIEW*

4Crude EOM Vol 1 Chapters 2, 3, 5, 6 & 7 are updated and posted to the EOM D&R web page for LTS as is Table 6.5-1-references to E-1178 have been deleted. Job Aids 4CU4739j, 4CU4740j, 4CU4742j, 4CU4743j have all been updated for LTS and are posted to the web.

*When possible include copies of documents referenced in the summary.

Stage Two Training and Communication Review

10/5/2012 10:10:57 AM

MOC No: 23282

Date Completed: 11/11/2011

Completed By: Curry, David P.

Person Responsible: Bessire, John P.

Project/Equipment Title:

Installation of E-1165A & E-1165B Isolation & Bypass Manifold.

Summary of Review:

Training has beemn broken into two parts 1. Start Up which will insure valves are set for start or run condition. Informational tags hung on valves . 2 Second training will take place prior to comisshioning E-1165C it will be just in time training

- ☐ **Identify the affected employees.**
  - * **Maintenance and Technical affected?**
  - * **Employee who will require training to start up the change based on the level of training.**
  - * **Employees who will receive training after the start up BUT before they can perform work affected by the change**
- ☐ **Procedures have been modified/written (Ops/SSO/Trainer)**
- ☐ **Identify the affected employees..**
  - * **Lesson plan cover sheet (includes training objective statement and list of affected employees)**
  - * **Procedural changes (Standing Orders, mark-ups)**
  - * **Flow daigrams (final or mark-ups)**
- ☐ **Determine level of training**
- ☑ **Training has been scheduled**
- ☐ **Affected employees have been trained in order to start up the change.**

APPENDIX III
PRE-START-UP SAFETY REVIEW CHECKLIST

You have been assigned a Pre Start-Up Safety Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

Passport No:
EWO No.: 5268
MOC PSSR.: 23282.001

MOC Number 23282
Filing Reference
Person Responsible Preciado, Silvano E.
Completed By Curry, David P.
Date Completed 11/11/2011

Project/Equipment Description:

Installation of E-1165A & E-1165B Isolation & Bypass Manifold.

Subsystem:

NOT The PSSR facilitator shall involve employees with expertise in process operations, maintenance, and engineering, based upon their experience and understanding of the process system being evaluated.

The following requirements for PSSR shall be addressed:	**Approved by:**	**Date**
1. Has the equipment and construction been completed in accordance with the critical design specifications? Some examples of how this may be accomplished are: * Review of equipment quality assurance and inspection records. * Review of construction inspection records. * P & ID "check" after mechanical completion, and facility "walk-through" inspection. **Justification:** Piping construction and equipment relocation has been completed in accordance with the design specifications. Piping has been verified against construction isometrics.	Banerjee, Ruchira	11/9/2011
2. Are Safety, operating, manintenance, and emergency procedures in place and adequate? * The phrase "in place and adequate" means: written, reviewed, approved, and accessible to employees requiring the procedures in their work. * This does not prevent the use of "mark-up" procedures to satisfy the requirement, but these must undergo the same review and approval and training interaction as would "the final version" of the same procedure and would require rigorous control. **Justification:** 4Crude EOM Vol 1 Chapters 2, 3, 5, 6 & 7 are updated and posted to the EOM D&R web page for LTS as is Table 6.5-1-references to E-1178 have been deleted. Job Aids 4CU4739j, 4CU4740j, 4CU4742j, 4CU4743j have all been updated for LTS and are posted to the web.	Cook, Donald L.	########
3. Has the communication or training of affected operating, maintenance, or contract workers been completed? * Maintenace employees, contractors, and other employees whose work is affected by the change must be informed of the change and training in the impact on their job tasks before the changed equipment is started up. **Justification:** Level training for start up - valve line up set	Curry, David P.	########
4. Have the quality assurance goals of mechanical integrity been met? * Ensure that changes are suitable for the intended service. * Ensure that the quality of the work is acceptable. * Ensure that the quality of the Leak Seal is acceptable. **Justification:** Piping welding fabrication requirements on this project are now complete and accepted by Welding Inspection	Alvarez, Silvano	########

APPENDIX III
PRE-START-UP SAFETY REVIEW CHECKLIST

You have been assigned a Pre Start-Up Safety Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

Passport No:
EWO No.: 5268
MOC PSSR.: 23282.001

MOC Number 23282
Filing Reference
Person Responsible Preciado, Silvano E.
Completed By Curry, David P.
Date Completed 11/11/2011

Project/Equipment Description:

Installation of E-1165A & E-1165B Isolation & Bypass Manifold.

Subsystem:

5. Have all recommendations resulting from PHA's or HSE's been addressed of resolved — Martinez, Dennis — 11/9/2011
   * Ensure tall Recommendations have been documented as addressed or resolved

   Justification: All PHA & HSE Items have been addressed

Are there any safety-related exceptions encountered during the PSSR that require follow-up after started up? ☐ **Yes**

Miscellaneous Comments:

The following note summarizes the PSSR walk through for the LTS project.

•Participants noted that piping is installed, however hydrostatic testing is incomplete (and is captured as an exception item).
•Worldwide Welding is responsible for submitting all QA/QC documents to Chevron upon mechanical completion.
•SID issues will be noted during the PSSR walk.
•Ensure baseline thicknesses for piping have been provided by the piping fabricator.

PSSR was conducted by system:
•Desalted Crude
•Vac. Resid
•ABCR
•Flush (includes 6S/C and Wash Oil)
•Utilities (includes 150# Steam, Condensate, BFW)
•Pumpout

Exception	*Owner*	*Completed By*	*Completed On*	*Notified*
Ensure all non-essential staging is removed before Unit start-up for personnel egress safety.	Curry, David P.	Curry, David P.	11/11/2011	11/9/2011
Blank exception	Cook, Donald L.	Cook, Donald L.	11/10/2011	11/10/2011
Pipe Labeling Required	Rojo, Raquel V.	Preciado, Silvano E.	7/5/2012	11/9/2011
Insulation PPE and Process piping, all other post startup	Rojo, Raquel V.	Curry, David P.	11/11/2011	11/9/2011
Complete Hydros	Rojo, Raquel V.	Curry, David P.	11/11/2011	11/9/2011
Complete Steam Tracing, for process piping, none essential piping after start up	Rojo, Raquel V.	Rojo, Raquel V.	11/16/2011	11/9/2011

APPENDIX III
PRE-START-UP SAFETY REVIEW CHECKLIST

You have been assigned a Pre Start-Up Safety Review. This checklist is a guide to help ensure that all information necessary to evaluate the change is considered.

Passport No:
EWO No.: 5268
MOC PSSR.: 23282.001

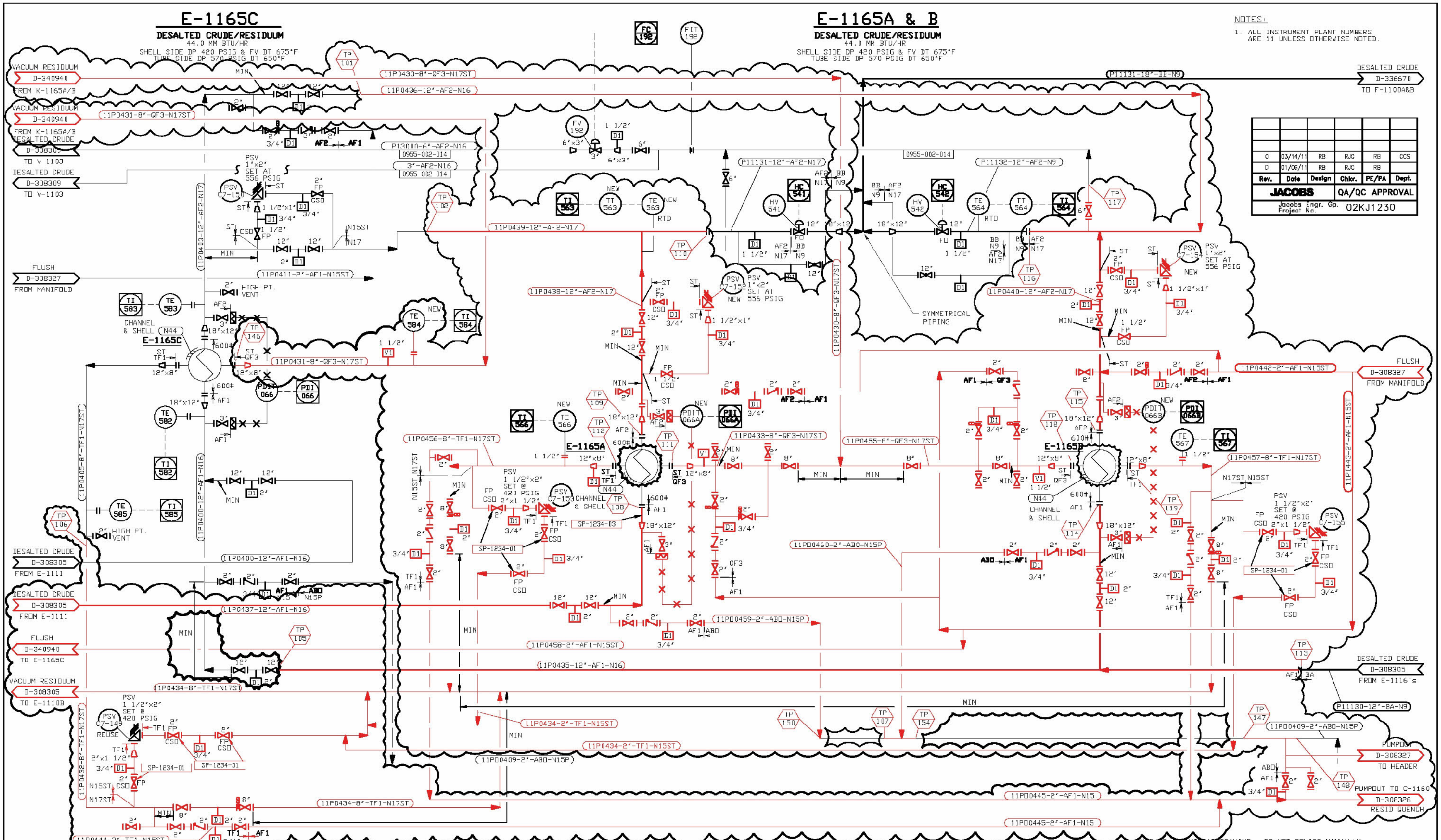
MOC Number 23282
Filing Reference
Person Responsible Preciado, Silvano E.
Completed By Curry, David P.
Date Completed 11/11/2011

Project/Equipment Description:

Installation of E-1165A & E-1165B Isolation & Bypass Manifold.

Subsystem:

Demo empty pedestals remaining from old STS piping. Could pose tripping hazard.	Rojo, Raquel V.	Rojo, Raquel V.	11/11/2011	11/9/2011
Grouting incomplete	Rojo, Raquel V.	Rojo, Raquel V.	12/12/2011	11/9/2011
Re-orient V-1160 upside-down valve	Rojo, Raquel V.	Rojo, Raquel V.	11/10/2011	11/9/2011
Install support for air line adjacent E1165 that was left over from E1178 demo	Anguiano, Adolfo A.			8/29/2012
Remove plastic plugs from drains (typ)	Rojo, Raquel V.	Rojo, Raquel V.	11/10/2011	11/9/2011
Rotate orientation of 2" pumpout valve on E-1165A Crude-side Outlet piping counterclockwise to ensure compliance with SID requirements once insulation is installed.	Rojo, Raquel V.	Rojo, Raquel V.	11/10/2011	11/9/2011
Change orientation of hand wheel associated with 12" block valve on E-1165A Crude-side Outlet such that hand wheel faces west.	Curry, David P.	Curry, David P.	11/11/2011	11/9/2011
New gearbox required at 12" block valve on Crude-side Inlet to E-1165A	Curry, David P.	Curry, David P.	11/11/2011	11/9/2011
install cover over the left when the instrumentation was removed side of C1160	Rojo, Raquel V.	Preciado, Silvano E.	2/23/2012	11/11/2011
install bleeder on pump out line that ties into resid quench	Rojo, Raquel V.	Rojo, Raquel V.	12/12/2011	11/11/2011
Remove all temporary piping associated with the turnaround.	Curry, David P.	Curry, David P.	11/11/2011	11/9/2011



NOTES:

1. ALL INSTRUMENT PLANT NUMBERS ARE 11 UNLESS OTHERWISE NOTED.

Rev.	Date	Design	Chkr.	PE/PA	Dept.
0	03/14/11	RB	RJC	RB	CCS
D	01/06/11	RB	RJC	RB	

JACOBS	QA/QC APPROVAL
Jacobs Engr. Gp. Project No.	02KJ1230

REFERENCE DRAWINGS	
NO. 4 CRUDE UNIT P&ID DRAWING INDEX	D-308298

REVISIONS			
D	ELIMINATE 4CU E-1165 PREHEAT FOULING LTS ISSUED FOR CONSTRUCTION	01-06-11	RFZK
C	ELIMINATE 4CU E-1165 PREHEAT FOULING LTS ISSUED FOR DESIGN	07 15 10	JSLB RFZK
B	ELIMINATE 4CU E-1165 PREHEAT FOULING LTS ISSUED FOR APPROVAL	03-30-10	JSLB RFZK
0	ELIMINATE 4CU E-1165 PREHEAT FOULING LTS RE-ISSUED FOR CONSTRUCTION	03 14 11	RFZK

Chevron
Richmond Refinery

SCALE NONE DR. JSLB DR. APP. DATE
ENGR. ENGR. DEPT.
OPR'G. DEPT.
APPROVED

03/14/2011

PIPING AND INSTRUMENT DIAGRAM
E-1165A/B & C DESALTED CRUDE /VAC. RESID EXCHANGERS
#4 CRUDE UNIT (PLANT 11)
DISTILLATION AND REFORMING AREA BUSINESS UNIT

A V.O S.O D-349791-0A-REV-0